



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/743,463	12/23/2003	Young Shik Kang	P69400US0	8143
136	7590	08/25/2004	EXAMINER	
JACOBSON HOLMAN PLLC 400 SEVENTH STREET N.W. SUITE 600 WASHINGTON, DC 20004			TRA, TUYEN Q	
			ART UNIT	PAPER NUMBER
			2873	

DATE MAILED: 08/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/743,463

Applicant(s)

KANG ET AL. *CA*

Examiner

Tuyen Q Tra

Art Unit

2873

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 1203.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

#### Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 2-4 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 recites a “the quantum wells are combined by the quantum wells having a narrow width and the quantum well having a wide width at ratio of  $m:n(m>n)$ ” which is not clear to examiner what kind of ratio does the claim refer to? The ratio of a narrow width quantum well to a wide width quantum well does not specify which ratio it is. Appropriate correction is required.

Claims 3 and 4 are also rejected because they are dependent on the rejected claim 2.

#### Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Mizutani et al. (U.S. Pat. 5,878,066 A).

EXAMINER NOTE: for examination purpose only, claim 2 is interpreted as being directed to the quantum wells are combined by the quantum well having a narrow width and the quantum well having a wide width at a width ratio of  $m:n (m>n)$

Art Unit: 2873

a) With respect to claim 1, Mizutani et al. discloses an optical semiconductor apparatus driving method therefor light source apparatus and optical communication system using the same in Figure 10A comprising of an absorption layer (1019, 1020), upper and lower clad layers (1023, 1041) formed on upper and lower portions of the absorption layer (1019, 1020), respectively; and electrodes (1033, 1037) for applying an electric field to the absorption layer, wherein the absorption layer is constructed by combination of two quantum wells (1019, 1020) with having a width different from each other (Figure 10A shows layer 1019 and 1020 having different width) (col. 15, lines 40-45; col.16, lines 10-15).

b) With respect to claim 2, Mizutani et al. further discloses wherein the quantum wells are combined by the quantum well having a narrow width and the quantum well having a wide width at a ratio of m:n ( $m > n$ ).

5. Claims 1, 5 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Kashima et al. (U.S. 6,008,066A).

a) With respect to claim 1, Kashima et al. discloses method of manufacturing a light emitting diode to vary band gap energy of active layer in Figure 1 an absorption layer (item 13), upper and lower clad layers (items 14, 12) formed on upper and lower portions of the absorption layer (13), respectively; and electrodes (items 19, 18) for applying an electric field to the absorption layer, wherein the absorption layer (13) is constructed by combination of two quantum wells (13a, 13c) with having a width different from each other (Figure 1 shows layer 13a and 13c having different width) (col.7, lines 18-20).

Art Unit: 2873

b) With respect to claims 5 and 6, Mizutani et al. further discloses wherein the absorption layer is made from an InGaASP based material; wherein the lower clad layer is formed of a semiconductor substrate.

#### **Allowable Subject Matter**

6. Claims 3 and 4 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The reason for the indication of allowable subject matter is that (claim 3) wherein the quantum well having the narrow width has a value of a greater than that of the quantum well having the wide width in the following equation  $P_{out} = P_{in} \exp(- (V/V_o)^a)$  disclosed in the claims is not found in the prior art.

#### **Conclusion**

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuyen Tra whose telephone number is (571) 272-2343. The examiner can normally be reached on Monday to Thursday from 8:30am to 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps, can be reached on (571) 272 - 2328. The fax number for this Group is (703) 872-9306.

tt

August 20, 2004

  
Hung Xuan Dang  
Primary Examiner